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A DIVISION OF
FLIGHTEX FABRICS INC.

~~CAMBRIDGE, MASS.~~

EVERETT, MASS.



REPORT NO. 6-60-50G-111

MONTHLY PROGRESS REPORT

ENGINEERING PROGRAM FOR
THE PILOT PRODUCTION OF A
LIGHTWEIGHT ANTITANK WEAPON

FOR THE PERIOD

MONTH OF JUNE 1960

CONTRACT NO. RD-142

ORDNANCE PROJECT NO.

DEPT. OF ARMY PROJECT NO.

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8

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HESSE - EASTERN DIVISION

FLIGHTEX FABRICS, INC.

PROGRESS REPORT #2

ENGINEERING PROGRAM FOR THE PILOT PRODUCTION OF

A LIGHTWEIGHT ANTITANK ROCKET

JUNE 1960

CONTRACT NO. RD-142

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WORK ACCOMPLISHED DURING THE MONTH OF JUNE 1960

SYSTEM EVALUATION PROGRAM

During the month of June the pilot production commenced on all sub-assemblies. Delays continue to hold up production of the HEAT head and plastic igniter parts only. However, samples of the plastic igniter parts have been received and fully tested. The supplier of these parts is now producing the remaining quantity.

Delays in receiving HEAT heads have been caused by the fact that the supplier is having difficulty in obtaining proper concentricity in the final head assembly. Deliveries of heads are to start early in July, however, and it is understood that the tooling has been changed to eliminate the trouble on final assembly of the head. The heads will be inspected at the supplier's plant before any shipments are accepted.

Explosive train functioning tests as discussed last month have been started, and initial indications are that the RDX pellet will be equal or superior in performance to the tetryl pellet as used in the R&D lot.

The specifications are being brought up to date by making notes in great detail as one subassembly operation after another is set up. A small sample lot of final systems will be subjected to a proof test late in July. Final loading will start in September. This timing will leave a sufficient safety margin for any contingencies and delays which may be encountered.

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TRAIN FUNCTIONING TESTS

The fixture described last month was used on 13 and 23 June to run a preliminary train functioning test. The following is a tabulation of the results:

<u>Shot No.</u>	<u>Booster Type</u>	<u>Dia. of Hole in $\frac{1}{2}$" Plate</u>	<u>Comments</u>
1	RDX	Over $\frac{1}{2}$ ".	Plate badly bent; fixture destroyed.
2	Tetryl	Identical to No. 1.	Considerable damage to fixture.
3	Tetryl	$\frac{1}{2}$ " hole.	Same as 1 and 2.
4	Tetryl	$\frac{5}{8}$ " hole.	" " " " "
5	RDX	$\frac{5}{8}$ " hole.	" " " " "
6	RDX	$\frac{1}{2}$ " hole.	Some changes were made to fixture; plate somewhat flatter; less damage to fixture.
7	RDX	$\frac{3}{4}$ " hole.	Same as 6.
8	Tetryl	$\frac{1}{2}$ " hole.	Same as 6.

The tests have shown that very little if any difference may be expected from the change to an RDX booster. If anything, the RDX has more output. One conclusion drawn from the tests is that a simpler and considerably more rugged fixture will be required in order to avoid making the very large number of fresh components which would be required if the present design were used to conduct a total of 100 test shots.

The new fixture is being designed at the present time, and it is planned to resume the train functioning tests in July.

- 2 -

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PILOT PRODUCTION

Head

All head metal parts have been completed at Eastern Tool & Mfg. Company. The assembly of parts and the machining of the threaded ring which holds the head to the motor are presently in process.

Some difficulties are being experienced in carrying out the latter operation. It appears that the cutting of the threads is throwing the concentricity of the assembly out of line. This is caused by the fact that the large lathe formerly used for this operation is no longer available. The soft jaws which were fitted to a three-jaw chuck on a smaller machine are not suitable for this operation. A new set-up is being prepared, and we were assured by Eastern Tool that deliveries will start during the first weeks of July. Their facility will be visited before this to inspect this operation.

Preparations for the loading of the heads have been completed at the J-2 Range. A deviation was granted to Eastern Tool & Mfg. Company to use a different type of paint for the inner surface of the head body. The new paint is not as heavy and dries to a harder consistency than the black asphalt paint as used to date. This situation needed attention, since in the case of the R&D lot the diameter of the fuze cavity in the head had been too small to allow any proper painting in this cavity. A phosphate coating was used in this area. Experiments have shown the new paint to be very satisfactory from every point of view.

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Fuze

Fuze arming component subassemblies have been started with one batch (250) assembled. This operation proved to be very straightforward with only slight improvements needed in some of the staking punches for attaching the rotor and the rotor bearing to the rotor shaft and the fuze housing.

Triggering component assemblies have been started with 180 assembled. No problems have been encountered in this operation, and only the addition of more detail in the description of the assembly operation in the fuze specification was necessary.

Fuze assemblies (180) have been put together; however, since the firing springs are not yet available, the final crimp cannot be put on the fuze. Some fuzes were tested statically and found to be operating satisfactorily. Fuzes will be tested dynamically as soon as the remainder of the system is available for proof testing.

Launcher

Launcher assembly has been set up on a tentative basis. It is expected that very early in July the launcher assembly line will be in operation. Each subassembly has been put together on a trial basis. All subassemblies connected with the launcher are being assembled at the present time. A rate of production of 250 launchers per week appears to be quite feasible. One of the problems in connection with this assembly is the fact that space at Everett does not permit the storing of more than one weekly production lot at a time. Each week a shipment of launchers will have to be made to the J-2 Range for storage prior to loading.

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The quality of the launchers produced will be superior to the R&D lot because of the semitubular rivets.

Igniter Assembly

Samples of the plastic components have been received, and a firing test at both extremes of temperature has been conducted using the heavy-walled steel motors. All rounds (4 hot; 4 cold) operated properly. The manufacturer was then asked to proceed with production. It is expected that the whole lot of igniter assemblies will be delivered during July.

Package and Canning Machine

The balancing equipment has arrived, and work is in process to improve the canning operation from the point of view of vibration. In the past, considerable vibration has been encountered during canning, mainly due to the fact that the off-balance condition in the package was compensated in a very crude fashion. By using balancing ways and by having considerably improved the rigidity of the canning machine, it will be possible to operate at full motor speed. A "Variac" has been used to reduce the speed of the motor on the canning machine until now. This arrangement is not very satisfactory, since it causes heating of the motor armature under load and, in time, may cause the winding on the motor to burn out. The fixture will be ready to go back to the range well before it is required for canning.

The outer container manufacturer has sent one sample of the wooden box used. The box as supplied did not open at the top but on the side. This situation will be corrected as will the ambiguity on our drawings and specifications.

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Dynamic Test Set-up

The holding clamps for positioning the plates for dynamic testing are being prepared in the machine shop. The site for dynamic penetration tests is ready at the J-2 Range. With preparation for final loading and test firing proceeding at the present rate of speed, it is expected that the anticipated time schedule will be kept on the project in spite of the very considerable delays being encountered in procuring the necessary components.

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